

# Abstract

**Title:** Robustification of statistical and econometrical regression methods

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**Abstract:** Multicollinearity and outlier presence are two problems of data which can occur during the regression analysis. In this thesis we are interested mainly in situations where combined outlier-multicollinearity problem is present. We will show first the behavior of classical methods developed for overcoming one of these problems. We will investigate the functionality of methods proposed as robust multicollinearity detectors as well. We will prove that proposed two-step procedures (in one step typically based on robust regression methods) are failing in outlier detection and therefore also multicollinearity detection, if the strong multicollinearity is present in the majority of the data. We will propose a new one-step method as a candidate for the robust detector of multicollinearity as well as the robust ridge regression estimate. We will derive its properties, behavior and propose the diagnostic tools derived from that method.

**Keywords:** multicollinearity, outliers, robust detector of multicollinearity, robust ridge regression